

NOTE-BOOK

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II

1947

Kyôto



The prairie (by Weaver & Fitzpatrick '34)  
p. 289. Six types of grassland occur, two of  
which are subclimax. Those of great importance  
are dominated by *Andropogon scoparius* and  
*A. furcatus*, respectively. Together they constitute  
fully 80 per cent of this grassland.

p. 29

*A. furcatus* " 5-10 ft,  $\hat{z}_0 H = (\hat{z}_2 +)$

True prairie indicator + 27, *Sporobolus asper* =  
247 " p. 154, foot note = '*Stipa spartea* formerly  
more abundant, but also *Sporobolus asper* was  
far more important than this detailed survey  
reveals them to be at present.' p. 71.



\*Distribution of the little-bluestem type is largely controlled by the shallow depth of soil above the underlying limestone. On the nearly level uplands where a mature soil profile has developed, it is replaced by the short-grass type. (p. 489)

Little bluestem forms distinct bunches in drier places but a nearly continuous sod-mat in wetter ones. The usual height of the foliage, which is only slightly exceeded by the flower stalks, is 12 to 16 inches when mature, except during years of drought. Then it may not exceed 3 to 5 inches, and no flower stalks are produced. (p. 523)

Albertson, 1937

*Andropogon scoparia* "mid grass" ? ?

"Albertson, 'Ecology of mixed Prairie' (37)  
7377312.

types p. 487

The short-grass (*Bulbilis-Bouteloua*) type, constituting 30 per cent of the prairie, is found widely distributed over the nearly level uplands. Smaller areas and strips also occur at the bases of the hills, especially on south-facing slopes, where the soil is underlain with an impervious clay. The most extensive type is that characterized by the little bluestem\* (*Andropogon scoparia*). It comprises 60 per cent of the area, occupying the hillsides and extending across shallow ravines. It also extends over the brows of the hills and far beyond where the slopes continue, but gives away more or less abruptly to short grasses on the level uplands. The big-bluestem (*A. furcatus*) type is much more limited in extent, constituting about 10 per cent of the prairie. It occupies the deeper ravines, lower portions of gentle slopes, and well watered lowlands.



\* Agropyron " big bluestem type = 717, 2 dominant species  
 727, little bluestem habitat = 737, 2, short-grass  
 habitat = principal species of grasses, 7 = 877  
 777 717, dominant = 71+1.

### exposure + vegetation

Two quadrats from opposite lower slopes often reveal distinctly different kinds of vegetation. One from the south-facing slope, where the impervious blue clay supported short grasses, and another from the same height on the north hillside, where the tall, dense growth of the big bluestem grasses is well developed, ... The forbs are also different. (p. 527)

### drought, 83%

The death of little bluestem by drought where it was intimately associated with big bluestem which survived seems, at first, paradoxical. The clue is found in the greater depth of rooting of the survivor. When soil moisture was exhausted to 3.5 to 4 feet, little bluestem perished. At this time big bluestem was absorbing from the 4-to 6-foot level. (p. 540)

Agropyron <sup>\*</sup>smithii, because of deficient rainfall, has increased greatly in the big bluestem comocios during the period of investigation. (p. 545)



no. of test area	dominants	other remarks	number of species	types of soils	page
1, 2, 4, 6	Bouteloua, Stipa, Carex filifolia	Agropyron $\frac{1}{2} + i$	high	sandy loam, brown free from salinity (low salt)	
3, 5,	Bouteloua, Agropyron, Carex, Stipa	Stipa, Carex $\frac{1}{2} + i$	fairly high	more clayey (clay loam = higher moisture holding capacity)	
7	Bouteloua, Carex, Koeleria, Calamovilfa, Stipa			sandy loam deep moisture	
8, 9,	Bouteloua, Agropyron, Stipa, (Carex, not filifolia)		low	clay	
10, 11-12, 13	Agropyron, Bouteloua, Carex	not mature	low	clay loam to clay	
14	Bouteloua, Agropyron, Stipa, Distichlis	$\frac{1}{2} \frac{1}{2} \frac{1}{2} \frac{1}{2} + i$	moderate	sandy loam (upper) clay (lower)	
15,	Agropyron, Distichlis (salt grass)	Bouteloua, Stipa $\frac{1}{2} + i$	moderate-low	more clay and moisture	
16,	Distichlis, Puccinella	Agropyron $\frac{1}{2} + i$ Bouteloua, Stipa $\frac{1}{2} + i$	low	loam to silty clay. high moisture, high salt, poor aeration	
17	Agropyron, Distichlis, Bouteloua	Stipa $\frac{1}{2} + i$ (comata) — high moisture + high clay —	low	loam, high (moisture salt)	
18, 20	Artemisia cana, Bouteloua, Agropyron, Stipa		high-low	clay, <sup>to silt</sup> salt low, recently deposited.	
19,	Artemisia cana, Agropyron, Stipa				
21, 22, 23 24	Calamovilfa, Carex, Stipa, Bouteloua	Agropyron $\frac{1}{2} + i$ Andropogon $\frac{1}{2} + i$ " A. scoparius	fairly high	sand to sandy loam low salt	



no. of test area	topography	dominants	other remarks	no. of species	types of soil
25, 26	lower slope steep	<i>Andropogon scoparius</i>		moderate - low	sandy loam, low salt, high moisture - silty loam
27, 28, 29	lower slope steep	<i>A. furcatus</i>		high	deep loam high colloidal content
30	lower slope	<i>Sporobolus</i> , <i>Andropogon</i> , <i>Carex</i> (not <i>filifolia</i> ) <i>Stipa</i> (not <i>comata</i> )	prairie type	high	sandy loam
33, 34		<i>Buchloe dactyloides</i> , <i>Agropyron</i>			clay, much colloidal content
35	flat between the hills.	<i>Distichlis</i> , <i>Puccinellia</i> , <i>Agropyron</i>			high salt, high clay, high colloid
36.	gentle slope	<i>Bouteloua</i> , <i>Stipa</i> , <i>Carex</i> (not <i>filifolia</i> )	L. variety		



\* tall-grass prairie, 270 ft

Weaver and Fitzpatrick (1924) classified 135 areas of tall-grass prairie into 6 types, 2 of which were climax. (p. 89) 1711

### mixed prairie, climax, 11 + 15\*

p. 108. In the Little Missouri country it appears that the grama-needlegrass-sedge type on upland plateaus and gentle upland slopes is nearer stabilization with climatic conditions than any of the other types studied. This type has had the longest period of time in which to reach stabilization.

The western wheatgrass-grama-sedge type appears to be a successional stage on slopes developing in the direction of the first type. ---

--- The big bluestem type is a more mesophytic type than the grama-needlegrass-sedge type but it cannot be considered climatically stabilized because it is located in places where moisture in excess of direct precipitation is received. It does not seem possible that direct precipitation in this region can support this true prairie type.



Weaver and Albertson, 1936.

p. 637

Invasion by the drought-resisting and rapidly spreading *Agropyron smithii* was rapid and locally complete. It occurred widely. *Bulbilis dactyloides* and *Festuca octoflora* were other native grasses that increased greatly, especially westward.



Michelmore, 1939, African grassland

#311.

Parts of the upland grasslands may occupy a climatic hiatus, to which neither the forest nor the savannah tree floras have become adapted.

Desert grasslands are due to the exclusion of other plants by drought, but it is not known why in some places grasses and in some places bushes or small herbs should extend furthest into the deserts.



Salisbury, 1929

p. 207.

The sexual method, except in these pseudo-apogamous species, is especially associated with the means of dispersal that promote colonisation of new areas and diminish the risk of rivalry between the parent and its offspring and between the seedlings themselves. On the other hand, vegetative propagation is usually associated with a better and more prolonged provision for the daughter individuals so that, whereas reproduction by means of seeds is particularly effective in the colonisation of unoccupied ground, vegetative multiplication is manifestly advantageous in closed communities.

p. 212.

The effectiveness of vegetative multiplication as a means of aggression results however mainly from the junction with the parent plant of which all the food resources are at the disposal of the new shoot.



p. 213.

According to Hackel cuttings or layerings of bamboos give rise to individuals that flower at the same time as do the parents from which they are taken.

p. 215

It is a familiar statement that most parasites have a high seed output, which is generally held to be a necessary concomitant of their very restricted environment, entailing a low percentage survival. Actually, however, there seems to be little data to support this.

p. 216.

It is perhaps true in general that the capacity for large seed output of viable seeds becomes the more important the earlier the phase of succession with which the species is associated. Conversely the more the habitat of a species approaches the climax the greater is the importance attaching to the capacity of vegetative increase.

p. 396.

Dry weight of plants is one of the best quantitative characteristics of vegetation (Hanson, 1938), and increase in dry weight is the best measure of growth (West, Briggs, and Kidd, 1920). The clip quadrat has been widely used by numerous American investigators (Sarvis, 1923; Taylor and Loftheld, 1924; Aldous 1930; Black, et al., 1937<sup>2</sup>) and has been found to be the most suitable form of the percentage production method on the grassveld in South Africa (West, 1936).<sup>3</sup>

<sup>1</sup> West, C., G. E. Briggs, and F. Kidd. 1920. Methods and significant relations in the quantitative analysis of plant growth. New Phytol. 19: 200-207.

<sup>2</sup> Black, W. H. et al. 1937. Effects of different methods of grazing on native vegetation and gains of steers in northern great plains. U. S. Dept. Agric., Tech. Bull. 547.

<sup>3</sup> West, O. 1936. An investigation of the methods of botanical analysis of pasture. South African Jour. Sci. 33: 501-559.



p. 396.

Although clipping studies serve as a valuable supplement to grazing equipments, they differ in several respects from actual grazing. The chief differences as observed by Culley, Campbell, and Canfield (1933) and others have been summarized by Weaver and Clements (1938) and the fact pointed out that clip quadrats are widely used.

summary.

p. 413.

Quadrats closely clipped for two seasons always gave lower total yields than a single clipping of the controls.

Yields from quadrats frequently clipped during two years were likewise much lower than from those similarly clipped for only a single year.

p. 412.

Total yield of the quadrats cut at frequent intervals for the first time exceeded those of the single yield from the controls at 4 of the 6 stations in 1933.